UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/926,236		Tomoki Suemasa	214489US2PCT	2551

22850 7590 07/08/2003

OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C.
1940 DUKE STREET
ALEXANDRIA, VA 22314

EXAMINER	
CROWELL, ANNA M	

ART UNIT	PAPER NUMBER
1763	

DATE MAILED: 07/08/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/926,236	SUEMASA, TOMOKI	
	Examiner	Art Unit	
	Michelle Crowell	1763	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☑ Responsive to communication(s) filed on *11 April 2003* .

2a)☑ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☑ Claim(s) *1-13* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☑ Claim(s) *1-10* is/are rejected.

7)☑ Claim(s) *11-13* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☑ The proposed drawing correction filed on *April 11, 2003* is: a)☒ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a)☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)
2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3)☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4)☐ Interview Summary (PTO-413) Paper No(s). _____ .
5)☐ Notice of Informal Patent Application (PTO-152)
6)☐ Other: .

DETAILED ACTION

Drawings

1. The proposed drawing correction and/or the proposed substitute sheets of drawings, filed on April 16, 2003 have been approved. A proper drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The correction to the drawings will not be held in abeyance.

Claim Objections

2. Claim 12 is objected to because of the following informalities: Claim 12 recites the following recitation, "the conductive chamber through the conductive wall body conductive member and conductive tubular member. There should be commas between conductive wall body, conductive member, and conductive tubular member. Appropriate correction is required.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 7 and 8 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

5. Claim 7 recites the limitation "the conductive member" in line 2. There is insufficient antecedent basis for this limitation in the claim.

6. Claim 8 recites the limitation "the conductive member" in line 2. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (c) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

8. Claims 1, 2, 7-8, and 10 are rejected under 35 U.S.C. 102(a) as being anticipated by Admitted Prior Art.

Referring to Figure 6 and page 1, line 9-page 2, line 7 of the specification, ~~Suemasa et al~~. discloses a plasma treatment apparatus 10 comprising: an airtight treatment chamber 12 which is conductive (Fig. 6); a lower electrode 16 including a mount portion on which an object W is to be mounted, the lower electrode being movable up and down in the treatment chamber; a power supply system 28 to supply high-frequency power to the lower electrode; and an elevator mechanism 24 to move the lower electrode up and down; a conductive wall body 22, 26 surrounding the elevator mechanism in close proximity and forming a path reaching to a floor

portion of the treatment chamber (see attached Fig. 6), the conductive wall body being fixed to the conductive chamber.

With respect to claim 2, the wall body 22 includes a through hole or groove to let escape air remaining in a space between the elevator mechanism and the wall body.

With respect to claims 7 and 8, the conductive wall body includes a baffle plate 22 having a plurality of through holes which communicates the discharge space and the exhaust space through the through holes (Fig. 6).

With respect to claim 10, the treatment chamber is grounded (Fig. 6).

Claims 1-4 and 7-10 are rejected under 35 U.S.C. 102(b) as being anticipated by Inazawa et al. (U.S. 5,772,833).

Referring to Figure 1 and column 4, line 40-column 6, line 54, Inazawa et al. discloses a plasma treatment apparatus comprising: an airtight treatment chamber 2 which is conductive (col. 4, lines 51-54, col. 6, lines 11-12); a lower electrode 13 including a mount portion on which an object 1 is to be mounted, the lower electrode being movable up and down in the treatment chamber; a power supply system 20 to supply high-frequency power to the lower electrode; and an elevator mechanism 101 to move the lower electrode up and down; a conductive wall body surrounding the elevator mechanism in close proximity and forming a path reaching to a floor portion of the treatment chamber, the conductive wall body being fixed to the conductive chamber. Additionally, as broadly claimed, the conductive wall body can be part of the conductive chamber. Therefore, the conductive wall body is clearly seen in Figure 1 as the portion including opening 6.

With respect to claim 2, the wall body includes a through hole 8 or groove to let escape air remaining in a space between the elevator mechanism and the wall body (col. 5, lines 6-8).

With respect to claim 3, the wall body includes an opening portion 6 through which the object is carried in and out (col. 4, lines 65-67).

With respect to claim 4, the elevator mechanism moves down the lower electrode to a position where the mounting portion faces the opening portion (col. 5, lines 21-27, lines 48-52).

With respect to claims 7 and 8, the conductive wall body includes a baffle plate 17 having a plurality of through holes 18 which communicates the discharge space and the exhaust space through the through holes (Fig. 1).

With respect to claim 9, the high-frequency power supplied from the power supply system has a frequency of at least 10 MHz (col. 6, lines 12-18).

With respect to claim 10, the treatment chamber is grounded (Fig. 1, col. 6, lines 11-12).

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

10. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out

the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

11. Claim 1 and 9-10 rejected under 35 U.S.C. 103(a) as being unpatentable over Al-Shaikh et al. (U.S. 6,221,221) in view of Inazawa et al. (U.S. 5,772,833).

Referring to Figure 2 and column 3, line 51-column 4, line 57, Al-Shaikh et al. discloses a plasma treatment apparatus comprising: an airtight treatment chamber 200 (Fig. 1); a lower electrode 230 including a mount portion on which an object 204 is to be mounted, the lower electrode being movable up and down in the treatment chamber (col. 4, lines 11-16) ; a power supply system 236 to supply high-frequency power to the lower electrode (col. 4, lines 32-34); and an elevator mechanism to move the lower electrode up and down (col. 4, lines 11-16); a conductive wall body 254 surrounding the elevator mechanism in close proximity and forming a path reaching to a floor portion of the treatment chamber, the conductive wall body being fixed to the conductive chamber (col. 4, lines 37-39).

Al-Shaikh et al. fails to specifically teach a conductive, grounded chamber.

Referring to Figure 1 and column 6, lines 11-12, Inazawa et al. teaches a plasma treatment apparatus wherein the treatment chamber 3 is conductive and grounded. It is well known for the chamber to be grounded in order to acts as an electrode (col. 6, lines 18-21). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to ground the chamber in Al-Shaikh et al. as taught by Inazawa et al so that the chamber can acts as an electrode.

Al-Shaikh et al. fails to specifically teach a frequency of at least 10 MHz.

Referring to col. 6, lines 11-18, Inazawa et al. teaches a plasma treatment apparatus wherein the high-frequency power supplied from the power supply system has a frequency of at least 10 MHz. When applying the claimed frequency, the lower electrode 13 can be biased for processing the substrate. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to provide a frequency of at least 10 MHz to the lower electrode of Al-Shaikh et al. as taught by Inazawa et al so that the lower electrode can be biased for processing the substrate.

12. Claims 1 and 9-10 rejected under 35 U.S.C. 103(a) as being unpatentable over Tamura et al. (Europe Patent Application 0644578A2).

Referring to Figure 13 and column 23, line 12-column 24, line 9, Tamura et al. discloses a plasma treatment apparatus comprising: an airtight treatment chamber 10 (Fig. 1 and 10); a lower electrode 2 including a mount portion on which an object 1 is to be mounted, the lower electrode being movable up and down in the treatment chamber (col. 23, lines 23-32) ; a power supply system 12 to supply high-frequency power to the lower electrode (Fig. 9-10, col. 19, lines 12-20); and an elevator mechanism to move the lower electrode up and down (col. 23, lines 23-32); a conductive wall body 67B surrounding the elevator mechanism in close proximity and forming a path reaching to a floor portion of the treatment chamber, the conductive wall body being fixed to the conductive chamber (col. 24, lines 1-4).

Tamura et al. fails to specifically teach a conductive, grounded chamber.

Referring to Figure 1 and column 6, lines 11-12, Inazawa et al. teaches a plasma

treatment apparatus wherein the treatment chamber 3 is conductive and grounded. It is well known for the chamber to be grounded in order to acts as an electrode (col. 6, lines 18-21). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to ground the chamber in Tamura et al. as taught by Inazawa et al so that the chamber can acts as an electrode.

Tamura et al. fails to specifically teach a frequency of at least 10 MHz. Referring to col. 6, lines 11-18, Inazawa et al. teaches a plasma treatment apparatus wherein the high-frequency power supplied from the power supply system has a frequency of at least 10 MHz. When applying the claimed frequency, the lower electrode 13 can be biased for processing the substrate. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to provide a frequency of at least 10 MHz to the lower electrode of Tamura et al. as taught by Inazawa et al so that the lower electrode can be biased for processing the substrate.

13. Claim 5 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Inazawa et al. (U.S. 5,772,833) in view of Washitani et al. (Japanese Patent Publication 04-240726).

The teachings of Inazawa et al. have been discussed above.

Inazawa et al. fails to teach a cover for a driving portion of the elevator mechanism.

Referring to Drawings 1 and 2, and the abstract, Washitani et al. teaches a plasma treatment apparatus wherein a cover (dust proof tubes A(21), B(22), and a double tube 23) to cover a driving portion of the elevator mechanism 4 is formed in the elevator mechanism 4. In addition, the cover 21,22,23 is disposed at least between the driving portion and the opening

where the object passes. The covers 21, 22, 23 prevent a reaction product from adhering to the inner wall and bellows (driving portion) of a reacting chamber 2. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to provide the elevator mechanism of with the covers as taught by Washitani et al. This would prevent a reaction product from adhering to the inner wall and driving portion of the treatment chamber.

Allowable Subject Matter

14. Claims 11-13 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

15. The following is a statement of reasons for the indication of allowable subject matter:

The prior art, either singly or in combinations, fail to anticipate or render obvious a plasma treatment apparatus including a conductive chamber and a conductive wall body wherein the conductive wall body includes a **ring shaped baffle plate** having an inner edge portion connected to the free end of the cylindrical conductive member and an **outer edge connected to the peripheral side wall of the conductive chamber** so that the conductive wall body is fixed to the conductive chamber and electrically connected thereto.

Response to Arguments

16. Applicant's arguments with respect to claims 1-13 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

17. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michelle Crowell whose telephone number is (703) 305-1956. The examiner can normally be reached on M-F (8:00 - 4:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory Mills can be reached on (703) 308-1633. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

AMC
June 30, 2003

Liz L. Alejandro
Primary Examiner
Art Unit 1763